

**Trialkylimidazolium-Tetrafluoroborate
Compatibilized,
Multiwalled Carbon Nanotubes**

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We have demonstrated that imidazolium salts are excellent cationic treatments for layered silicates (clays); they enable high temperature curing and melt processing of polymer clay nanocomposites, due to their high thermal stability and excellent polymer compatibility when one of the imidazolium alkyl groups is a C-16 aliphatic chain. In addition we have also been investigating the use of imidazolium salts to compatibilize carbon nanotubes with polymers. We report here that Trialkylimidazolium-tetrafluoroborate, (IM) compatibilized, multiwalled carbon nanotubes (MWNT) were used to prepare well dispersed polystyrene (PS) IM-MWNT nanocomposites via melt extrusion. Quantitative TEM image analysis revealed superior dispersion of the MWNTs in the presence of the imidazolium. DSC revealed no phase separated imidazolium and TGA showed an increased thermal stability in the PS/ (1:1) IM-MWNT nanocomposite. FTIR of the 1:1 imidazolium treated MWNTs provided direct evidence for a π -cation, nanotube-imidazolium interaction. XRD showed the conversion from an interdigitated-bilayer, liquid crystal ($d = 28$ nm, m.p. 70 °C) for the imidazolium salt to an ordered lamellar structure ($d = 4.6$ nm, no m.p.) in the 1:1 imidazolium treated MWNTs.